

## **REMARKS**

### **I. Status of Claims**

Claims 17-100 are pending. Claims 21-25, 30-37, 40, 41, 43, 54, 55, 58-60, 65-72, 75, 76, and 78 have been previously withdrawn from consideration by the Office, as directed to non-elected invention/species. No amendments are made in this reply.

### **II. Allowable Subject Matter**

Applicants would like to thank Examiner Elhilo for indicating that claims 17-20, 28, 29, 38, 39, 42, 44-53, 56, 57, 63, 64, 73, 74, and 79-100 contain allowable subject matter. Office Action at page 2.

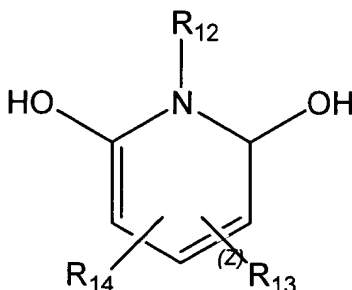
As provided in the Office Action dated April 5, 2004, the Office "extended" the search of the Markush-type claim with respect to the non-elected species, but failed to indicate what species of element (a) in claim 17 were included in this extension. Thus, Applicants respectfully request clarification regarding which formulae from element (a), i.e., at least one active methylene group, will be incorporated into the allowable subject matter of claim 17.

### **III. Rejection under 35 U.S.C. § 112**

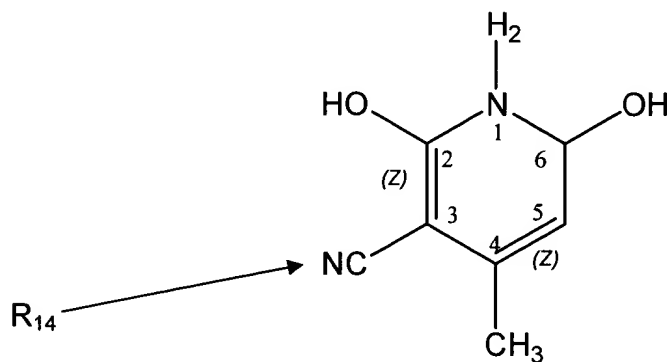
Under 35 U.S.C. § 112, 2nd paragraph, the Office maintains that claims 26, 27, 61, and 62 are indefinite for failing to particularly, point out and distinctly claim the subject matter of the invention. Office Action at page 2. Specifically, these particular claims recite a limitation drawn to "2,6-dihydroxy-3-cyano-4-methylpyridine" that allegedly lacks sufficient antecedent basis because the pyridine derivatives of formula

(VII),  $R_{13}$  and  $R_{14}$  lack a recitation of a cyano radical. *Id.* Applicants continue to respectfully disagree for the reasons of record and for the following additional reasons.

The base claims (claims 17 and 49), from which claims 26, 27, 61, and 62 depend, recite formula (VII):



Specifically,  $R_{14}$  "is chosen from hydrogen; *nitrile groups*; alkyl groups, optionally substituted; and  $-\text{COOR}$  groups wherein R is chosen from hydrogen and alkyl groups, optionally substituted." See independent claims 17 and 49 (emphasis added). The compound 2,6-dihydroxy-3-cyano-4-methylpyridine recited in the rejected claim is drawn below:



In this case,  $R_{14}$  equals a  $-\text{CN}$  functional group known as a nitrile or a cyano group. See Dictionary of Chemistry 162, 381 (John Daintith ed., 4th ed. 2000) (a copy of which is attached for the Office's convenience). Moreover, at least on page 11 of the specification, Applicants exemplify possible compounds falling within the purview of

formula (VII), of which, e.g., among other things, 2,6-dihydroxy-3-cyano-4 methyl pyridine and those of the cyanopyridone, aminonitropyridone and aminocyanopyridone families fall within formula (VII). Thus, a skilled artisan considering the claim language as well as the content of the specification would understand that a "cyano" group is a "nitrile" group. Accordingly, the rejection is moot and thus, Applicants respectfully request the withdrawal of the rejection.


#### IV. Conclusion

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

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GARRETT & DUNNER, L.L.P.

Dated: August 23, 2005

By:   
Adriana L. Burgy  
Reg. No. 48,564

**Attachment: Dictionary of Chemistry 162, 381 (John Daintith ed., 4th ed. 2000).**

# Oxford Paperback Reference

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# A Dictionary of **Chemistry**

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Edited by  
JOHN DAINTITH

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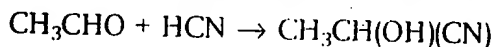
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**cyanogen** A colourless gas,  $(\text{CN})_2$ , with a pungent odour; soluble in water, ethanol, and ether; d.  $2.335 \text{ g dm}^{-3}$ ; m.p.  $-27.9^\circ\text{C}$ ; b.p.  $-20.7^\circ\text{C}$ . The compound is very toxic. It may be prepared in the laboratory by heating mercury(II) cyanide; industrially it is made by gas-phase oxidation of hydrogen cyanide using air over a silver catalyst, chlorine over activated silicon(IV) oxide, or nitrogen dioxide over a copper(II) salt. Cyanogen is an important intermediate in the preparation of various fertilizers and is also used as a stabilizer in making nitrocellulose. It is an example of a \*pseudohalogen.

**cyano group** The group  $-\text{CN}$  in a chemical compound. See **nitriles**.

**cyanohydrins** Organic compounds formed by the addition of hydrogen cyanide to aldehydes or ketones (in the presence of a base). The first step is attack by a  $\text{CN}^-$  ion on the carbonyl carbon atom. The final product is a compound in which a  $-\text{CN}$  and  $-\text{OH}$  group are attached to the same carbon atom. For example, ethanal reacts as follows



The product is 2-hydroxypropanonitrile. Cyanohydrins of this type can be oxidized to  $\alpha$ -hydroxy carboxylic acids.

**cyanuric acid** A white crystalline water-soluble trimer of cyanic acid,  $(\text{HNCO})_3$ . It is a cyclic compound having a six-membered ring made of alternating imide (NH) and carbonyl (CO) groups.

**cyclamates** Salts of the acid,  $\text{C}_6\text{H}_{11}\text{NH.SO}_3\text{H}$ , where  $\text{C}_6\text{H}_{11}-$  is a cyclohexyl group. Sodium and calcium cyclamates were formerly used as sweetening agents in soft drinks, etc, until their use was banned when they were suspected of causing cancer.

**cyclic** Describing a compound that has a ring of atoms in its molecules. In *homocyclic* compounds all the atoms in the ring are the same type, e.g. benzene ( $\text{C}_6\text{H}_6$ ) and cyclohexane ( $\text{C}_6\text{H}_{12}$ ). These two examples are also examples of *carbocyclic* compounds; i.e. the rings are of carbon atoms. If different atoms occur in the ring, as in pyridine ( $\text{C}_5\text{H}_5\text{N}$ ), the compound is said to be *heterocyclic*.

**cyclic AMP** A derivative of \*ATP that is widespread in animal cells as a second messenger in many biochemical reactions induced by hormones. Upon reaching their target cells, the hormones activate adenylate cyclase, the enzyme that catalyses cyclic AMP production. Cyclic AMP ultimately activates the enzymes of the reaction induced by the hormone concerned. Cyclic AMP is also involved in controlling gene expression and cell division, in immune responses, and in nervous transmission.

**cyclization** The formation of a cyclic compound from an open-chain compound. See **ring**.

**cyclo-** Prefix designating a cyclic compound, e.g. a cycloalkane or a cyclosilicate.

**Nitric acid** is a strong acid (highly dissociated in aqueous solution) and dilute solutions behave much like other mineral acids. Concentrated nitric acid is a strong oxidizing agent. Most metals dissolve to form nitrates but with the evolution of nitrogen oxides. Concentrated nitric acid also reacts with several nonmetals to give the oxo acid or oxide. Nitric acid is generally stored in dark brown bottles because of the photolytic decomposition to dinitrogen tetroxide. See also **nitration**.

**nitric oxide** See **nitrogen monoxide**.

**nitrides** Compounds of nitrogen with a more electropositive element. Boron nitride is a covalent compound having macromolecular crystals. Certain electropositive elements, such as lithium, magnesium, and calcium, react directly with nitrogen to form ionic nitrides containing the  $\text{N}^{3-}$  ion. Transition elements form a range of interstitial nitrides (e.g.  $\text{Mn}_4\text{N}$ ,  $\text{W}_2\text{N}$ ), which can be produced by heating the metal in ammonia.

**nitriding** The process of hardening the surface of steel by producing a layer of iron nitride. One technique is to heat the metal in ammonia gas. Another is to dip the hot metal in a bath of molten sodium cyanide.

**nitrification** A chemical process in which nitrogen (mostly in the form of ammonia) in plant and animal wastes and dead remains is oxidized at first to nitrites and then to nitrates. These reactions are effected mainly by the bacteria *Nitrosomonas* and *Nitrobacter*, respectively. Unlike ammonia, nitrates are readily taken up by plant roots; nitrification is therefore a crucial part of the nitrogen cycle. Nitrogen-containing compounds are often applied to soils deficient in this element, as fertilizer. Compare **denitrification**.

**nitrile rubber** A copolymer of buta-1,3-diene and propenenitrile. It is a commercially important synthetic rubber because of its resistance to oil and many solvents.

**nitriles (cyanides)** Organic compounds containing the group  $\text{-CN}$  bound to an organic group. Nitriles are made by reaction between potassium cyanide and haloalkanes in alcoholic solution; e.g.



An alternative method is dehydration of amides



They can be hydrolysed to amides and carboxylic acids and can be reduced to amines.

**nitrite** A salt or ester of nitrous acid. The salts contain the dioxonitrate (III) ion  $\text{NO}_2^-$ , which has a bond angle of  $115^\circ$ .

**nitroalkane (nitroparaffin)** A type of organic compound of general formula  $\text{C}_n\text{H}_{2n+1}\text{NO}_2$ . The nitroalkanes are colourless pleasant-smelling liquids made by treating a haloalkane with silver nitrate. They can be reduced to amines by the action of tin and hydrochloric acid; lower